of Karell, Oertel and Widal, in order to overcome certain difficulties in their application. When this has been done a few times it will be easier to modify these treatments to suit individual cases.

The Administration of Salvarsan.—MONTGOMERY (*Jour. Amer. Med. Assoc.*, 1911, lvi, 501) discusses in brief the remedy and the preparation of the solutions for intramuscular and subcutaneous use. He prefers the administration of salvarsan by intravenous injection since the remedy is given in a painless manner that insures the rapid diffusion of the full dose without running the risk of ensuing necrosis or abscesses, or of chronic arsenical poisoning from prolonged absorption. Montgomery gives a very clear and detailed description of the technique of the intravenous administration as practised by Schreiber. About 20 c.c. of warm distilled water are poured into a graduated glass cylinder of a capacity of 250 c.c. This cylinder should have a glass stopper. The glass capsule containing the salvarsan powder is now wiped off with gauze soaked in alcohol, and then with gauze soaked in ether. After breaking the capsule, the powder is poured on the water in the graduated glass tube, the stopper put in, and the contents well shaken. There is no necessity of using glass balls here, as the quantity of water is ample to dissolve the salvarsan readily. It is important not to reverse this procedure, for if the powder is poured into the tube first, and the water afterward, a gummy mass forms in the bottom that dissolves with difficulty. This solution should be light yellow and perfectly clear. That it should be clear is a matter of very great importance, as it is highly necessary that no undissolved particles be present. Now we have an acid solution in sterilized water of the contents of one tube, the quantity of which is usually 0.5 or 0.6 gram. If it is 0.5, the graduated tube should be filled up with water to the 50 c.c. mark; if 0.6, to the 60 c.c. mark, so that each 10 c.c. will represent 0.1 of the drug. Schreiber usually gives 0.3 gram of salvarsan to a woman and 0.4 gram to a man. If it is desired to give 0.4, he pours 40 c.c. of the acid solution into another graduate furnished with a glass stopper, and fills up to the 200 c.c. mark with warm sterilized water, and to this adds about 20 c.c. of normal sodium hydroxide solution. This should be added a little at a time, and each time a little is added the glass stopper should be put in and the cylinder well shaken. At first a precipitate forms that gradually disappears on the addition of more caustic soda solution. When the solution is again clear, it is alkaline and ready for injection. The flask containing the sterilized distilled water for use in making the solutions should not be stoppered with cotton, but with gauze, as cotton fibers, falling into the fluid, might cause trouble. The best syringe for injecting is a glass Lüer of about 20 c.c. capacity. It should not have a metal plunger, as in that case the least blood may cause binding. A two-way cock is introduced between the needle and the barrel. Schreiber has a special needle made with a bayonet bend in the shaft, and on this bend a ribbed finger-hold. The bayonet bend is to allow the needle to be more easily shoved along in the lumen of the vein. A rubber tube is fitted to the lateral outlet of the two-way cock. The arm is now laid out on a cushion, so as to lie flat and easy; a stout rubber tube is thrown around the middle of the upper arm and drawn tight enough to stop the flow of blood in the superficial veins, but not so tight as to impede the arterial supply, and fastened with artery forceps or a modern clip. It is very necessary that the arm should lie easy and still. The seat of operation should be wiped off with gauze soaked in alcohol. About 4 c.c. of normal salt solution are drawn into the syringe, so that by running the plunger forward the air may be expelled from the needle and from the rubber tube attached to the outlets of the two-way cock. The needle is then inserted through the skin over a vein, and run along into the vein. When the needle enters the vein a little blood flows back into the normal salt solution in the syringe. If the plunger is pressed forward, the salt solution entering the vein will distend it a little, and when it does so the tourniquet band about the arm may be removed, and the vein will collapse. The insertion of the needle is a very important step in the operation. For instance, by blood flowing back into the syringe it is known that the needle has entered the vein. The syringe, still containing a little salt solution and with its needle lying in the vein, is now ready for injecting the fluid, which is held in a glass beaker so that the rubber tube attached to the lateral opening of the two-way tap drops into it. The instrument is free of air, so that there is no fear of air embolus. By turning the cock of the two-way tap, the salvarsan solution may be alternately sucked up into the syringe, and forced into the vein. When the salvarsan solution is almost exhausted, a little normal salt solution is thrown into the beaker, and also injected into the vein. This is to clear away any of the salvarsan solution that would otherwise trickle out into the tissues on withdrawing the needle. A very important matter in this part of the operation is the injection of the small quantity of normal salt solution, both before and after injecting the salvarsan. By injecting the normal salt solution at first one makes sure that the needle is in the vein, for if it is not in the vein, the injected fluid makes a little infiltration in the subcutaneous tissue, while if it is in its proper position the already distended vein grows a little larger. If this sign should fail there is still a symptom showing that the needle is not in place, for as soon as a little of the salvarsan enters the subcutaneous tissue the patient will experience a burning pain, in which case the needle should be immediately withdrawn and free bleeding induced from the punctured wound. Another vein should then be chosen for the injection Any subcutaneous vein that can be distended may be chosen, and in fleshy women Schreiber has even injected into one at the wrist. Sometimes when the vein cannot be seen it may be felt. The fluid should be injected slowly, say in five or six minutes, so as to avoid sudden overloading of the circulatory system. Although the description of the operation is long, tedious, and complicated, yet the performance is very simple, and the patients experience very little inconvenience. They should remain twenty-four hours in bed.

Treatment of Splenic Anemia by Splenectomy.—SUTHERLAND and BURGHARD (*Lancet*, 1910, clxxix, 1819) report 2 cases of splenic anemia successfully treated by splenectomy. They give the details of the cases treated. One patient, a girl, aged twelve years, was in very bad condition when operated on. Three days after the operation the red cells had increased from 2,500,000 to 4,700,000, and the hemoglobin from 40 per cent. to 76 per cent. This change was accompanied by a marked difference in the appearance of the child. Four years after the operation a blood examination showed a hemoglobin percentage of 78 per cent. and a red blood count of 3,600,000. The second patient was a girl, aged six years. Four days after the operation the red cells increased from 1,870,000 to 4,000,000, hemoglobin from 30 per cent. to 52 per cent., and leukocytes from 2400 to 10,800. Nucleated forms of red blood cells that were previously abundant had disappeared from the blood, as did also degenerated forms of red blood cells. In the count previous to operation there were 1.2 per cent. of myelocytes present and degenerated forms of leukocytes. These also disappeared after the operation. On the seventeenth day after the operation the red cells were 5,200,000; white cells, 3400, and the hemoglobin was 65 per cent. Seven weeks after the operation the patient was practically well.

PEDIATRICS.

UNDER THE CHARGE OF

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Investigation on Tuberculous Infection in Children.—ROTHE (*Deutsch. med. Woch.*, 1911, xxxvii. 343) has instituted investigations supplementing those made by Gaffky, in order to determine the frequency of bronchial and mesenteric tuberculosis in children—the mode of invasion, and the significance of bovine tuberculosis in this connection. The Gaffky series of 300 cases coming to autopsy showed, by animal experimentation, 19 per cent. infected with tuberculosis; glandular infection was proved in 29 cases, 11 in the mesenteric, and 17 in the bronchial glands. In 55 cases 78 pure cultures were obtained, all belonging to the human type of tuberculosis. Rothe's material was obtained from 100 autopsies on children up to the fifth year. The bronchial and mesenteric glands in each case were tested by injection into guinea-pigs—264 guinea-pigs with mesenteric, 250 with bronchial glandular material. The positive strains were worked out through subsequent injections on guinea-pigs and rabbits. Out of the 100 cases investigated, 77 were under two years of age. In the 55 males, 27.27 per cent. were proved tuberculous. Of the 45 females, only 13.33 per cent. proved positive. The total positive percentage in the series was 21 per cent. In 13 of these 21 cases, both the bronchial and mesenteric glands were infected; in 3 cases the mesenteric glands alone, and in 5 cases the bronchial glands alone, were infected. This tends to show that the infection does not, as a rule, occur through the intestinal tract. From the 34 pure cultures obtained, 32 belonged to the human type and only 2 to the bovine type. Combining Gaffky's and Rothe's series, making a total of 400 cases, 20 per cent. were proved tuberculous. Both sets of glands were infected in 42 cases, 14 times in the mesenteric and 22 times in the bronchial glands, showing that the intestinal tract as an entrance is not a strong factor in children, and that the respira-